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(58) Field of Search

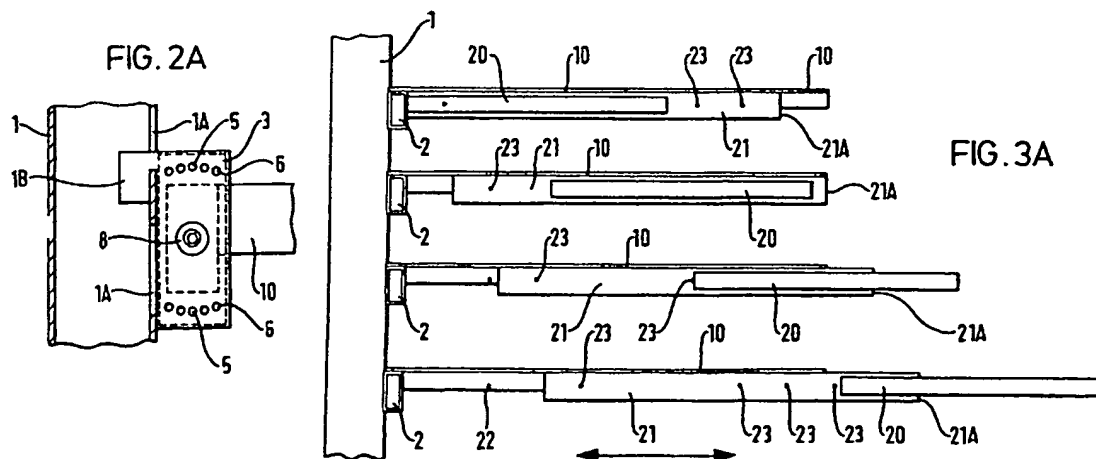
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(54) Adjustable shelf

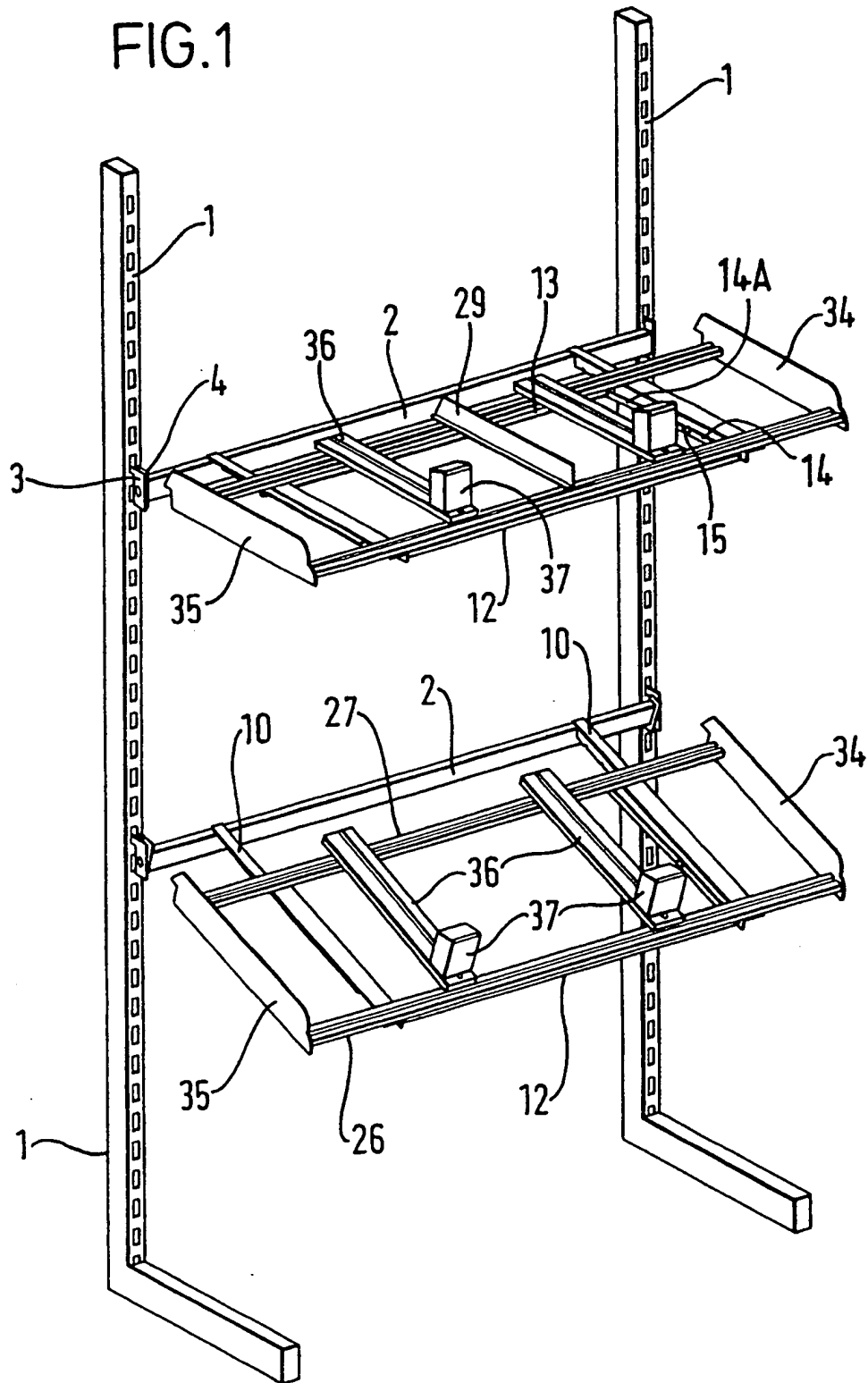
(57) An extendable shelf assembly is adapted to be removable mounted on the slotted uprights (1) of a display stand and comprises a shelf mounted on shelf support means (10), shelf extending means (20, 21) attached to said shelf and the shelf support means and operable so that the shelf can be extended or retracted. Manually operable locking means are also provided which permit the shelf to be extended or retracted and moved from one position to another when the locking means are released, the locking means retaining the shelf in its selected position when engaged.

An angularly adjustable shelf support assembly is also disclosed which comprises a first mounting member (3) with means (1B) thereon for releasably attaching said member to a slotted upright (1) and a second mounting member for attachment to the shelf to take the load thereof. The first and second mounting members having cooperating pegs (5) and holes (6) thereon by means of which the angular orientation of the second member relative to the first member can be changed and securing means to hold the first and mounting members together in their selected angular orientation.



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FIG.1



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FIG. 2A

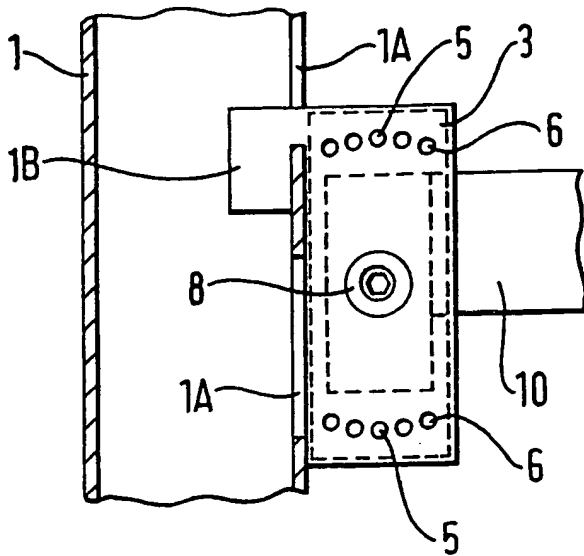


FIG. 2B

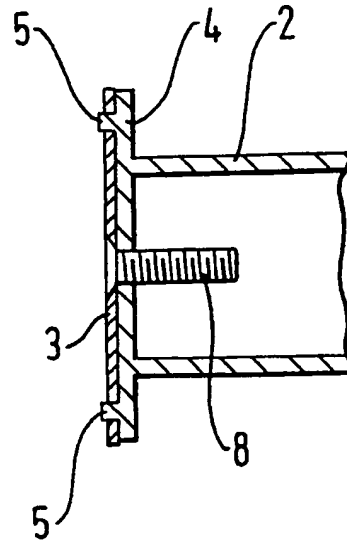


FIG. 2C

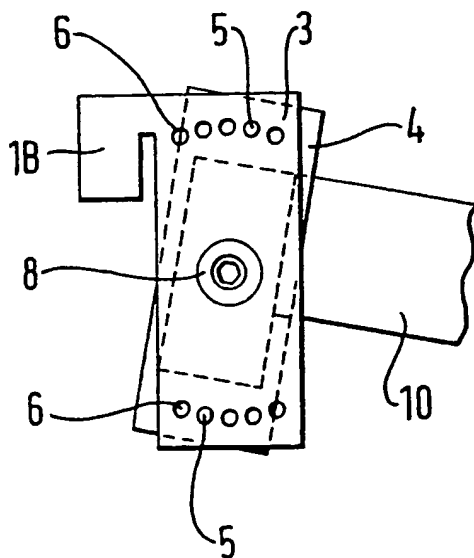
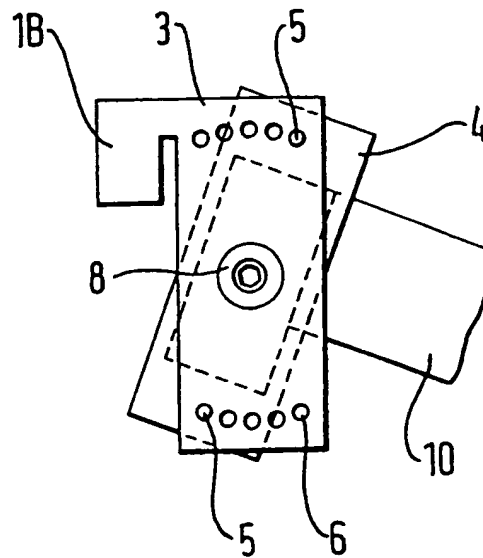


FIG. 2D



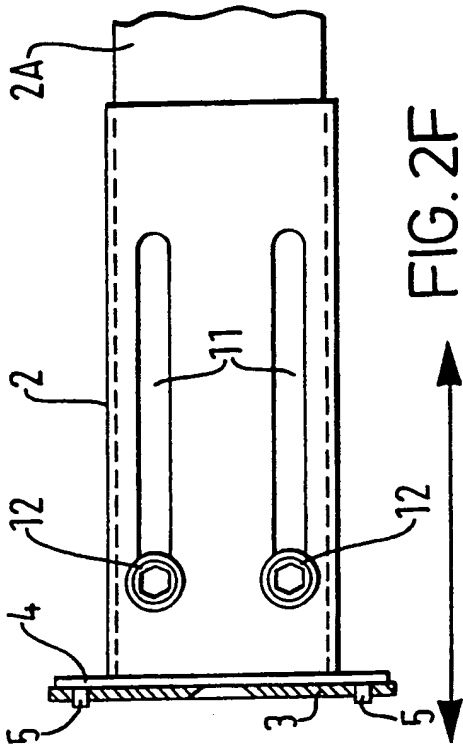


FIG. 2F

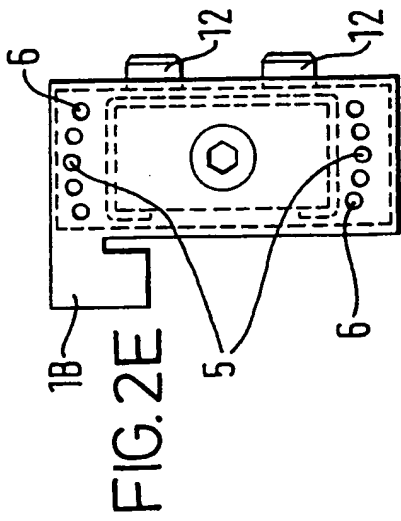


FIG. 2E

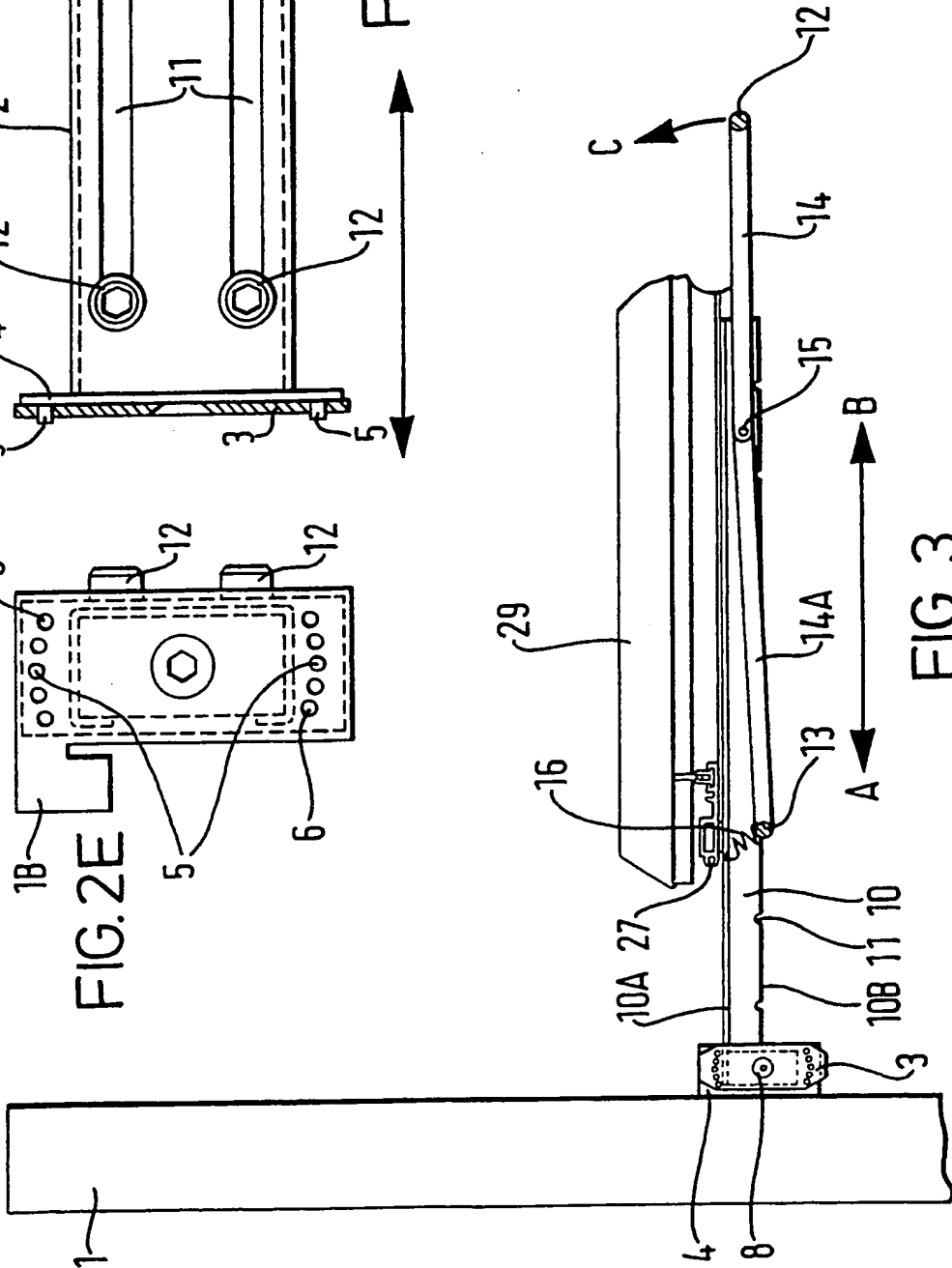
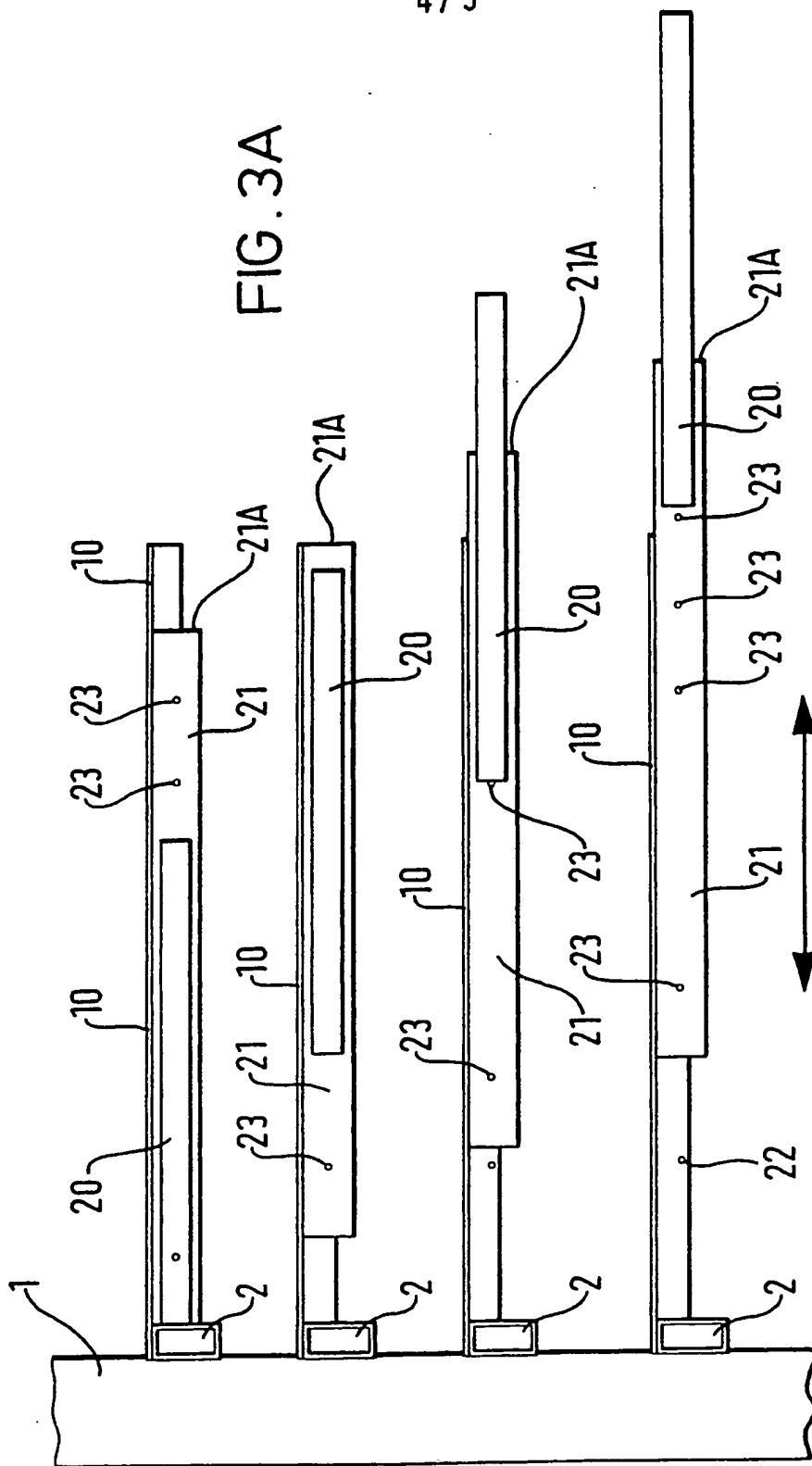


FIG. 3



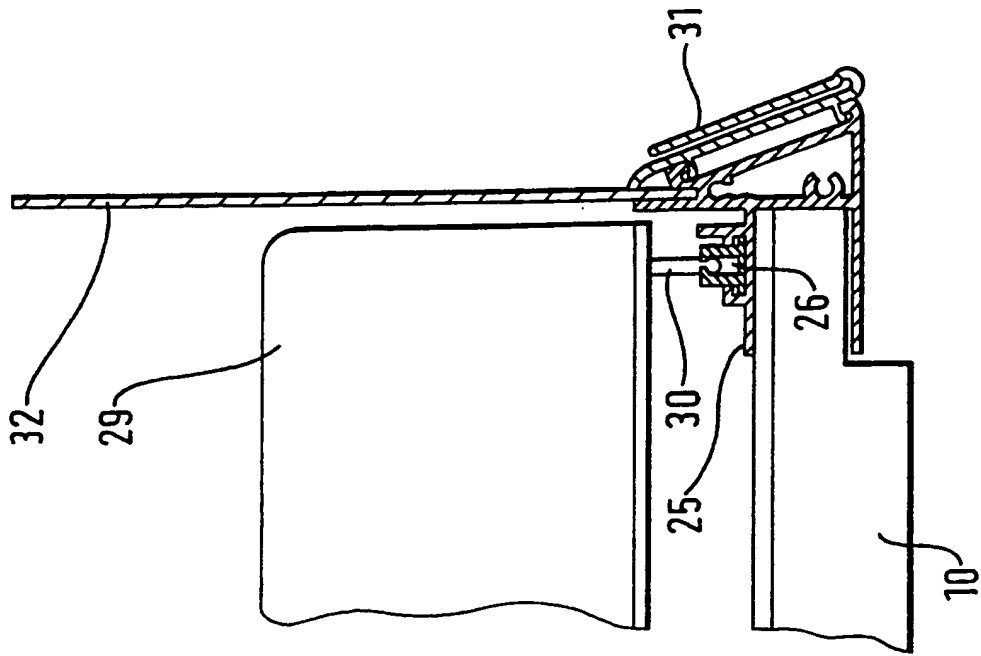
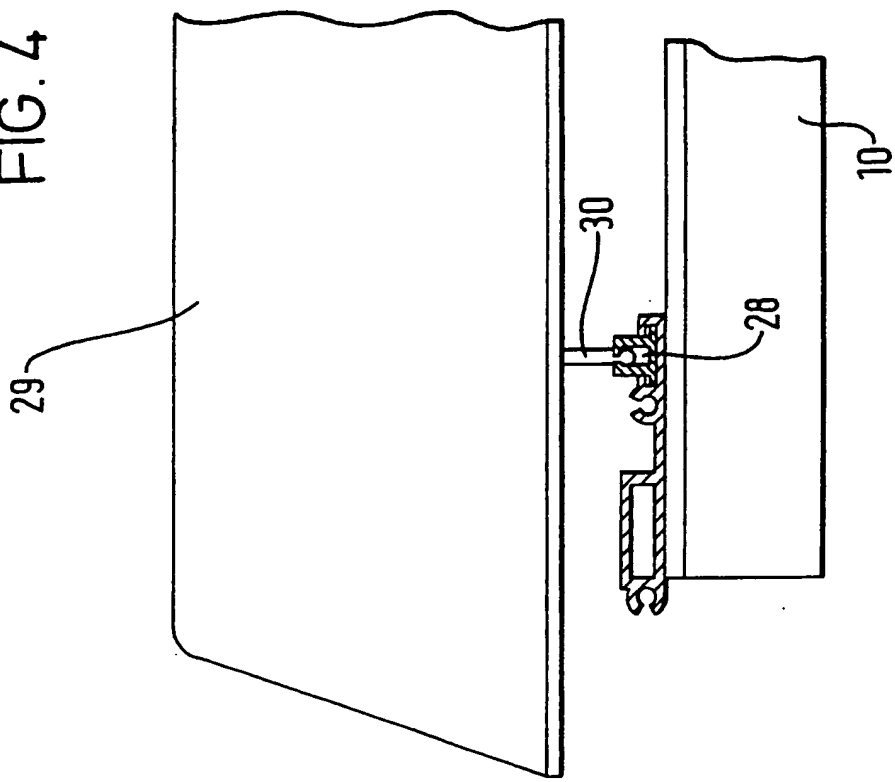


FIG. 4



- 1 -

ADJUSTABLE SHELF ASSEMBLY
FOR MERCHANDISING DISPLAY STAND

This invention relates to adjustable shelf assemblies for
5 use in merchandising display stands of the type including a
pair of vertically slotted spaced uprights to which the
shelf assemblies can be attached at varying heights.

There is a need in merchandising display stands for the
10 shelf assemblies fitted thereto to be mounted on the stand
at adjustable heights and also for the angle of the shelves
to the horizontal to be adjustable to better display the
products thereon.

15 There is also a need in such merchandising display stands to
provide a facility for the shelves to be extended
horizontally otherwise it can be difficult to gain access to
products at the rear of the lower shelves. By arranging for
the front region of each shelf to protrude slightly further
20 than the shelf above it, it is possible to arrange for all
the products displayed on each shelf to be readily
accessible to the buying public thereby substantially
improving the sales through-put of the display stand.

25 According to one aspect of the invention therefore there is
provided an angularly adjustable shelf support assembly

comprising a first mounting member with means thereon for releasably attaching said member to a slotted upright and a second mounting member for attachment to the shelf to take the load thereof, said first and second mounting members
5 having cooperating pegs and holes thereon by means of which the angular orientation of the second member relative to the first member can be changed and securing means to hold the first and second mounting members together in their selected angular orientation.

10

Preferably, a pair of pegs protrude from one mounting member to cooperate with a series of holes arranged in an arc on the other mounting member.

15 Conveniently, the pegs are located diametrically opposite each other and the securing means is located midway between said pair of pegs.

In a preferred embodiment, the securing means is a screw
20 which passes through a hole in the first mounting member and is received in the second mounting member.

Preferably the first and second mounting members are flat plates, the holes and pegs being arranged on the first and
25 second mounting members around a central axis about which the second member rotates.

Other configurations of cooperating hole and peg locating means are however envisaged. For instance, the two plates can be pivotally attached to each other and a releasable spring loaded peg can be mounted on one of the plates for
5 engagement in the holes in the other plate.

The invention further provides an extendable shelf assembly for fitting to the slotted uprights of a merchandising display stand comprising a shelf mounted on shelf support
10 means, shelf extending means attached to said shelf and the shelf support means and operable so that the shelf can be extended or retracted, and manually operable locking means which permit the shelf to be extended or retracted and moved from one position to another when the locking means are
15 released, said locking means retaining the shelf in its selected position when engaged.

Preferably, the shelf extension means comprises at least one extendable runner assembly with a fixed member and a runner
20 movably mounted thereon, the fixed member being attached to the shelf support means and the movable runner being attached to the shelf, the movable member being mounted so as to be extendable from or retractable within the fixed member.

25

Preferably, the shelf support means includes mounting means

adapted to permit the longitudinal position of the fixed member of the runner assembly on the support means to be varied. The mounting means can comprise a series of spaced holes or a longitudinally extending slot formed in the shelf support means. This arrangement is particularly advantageous in that it allows the shelves on a display stand to be arranged in a cascading configuration (i.e. with each shelf extending further out than the shelf above it) while still allowing each shelf to be able to be pulled out horizontally by its maximum permitted distance.

Preferably, the locking means is mounted on the extendable shelf and engages with the shelf support means to retain the shelf in a selected horizontal position.

15

The shelf support means preferably has incrementally spaced holes or detents thereon engagable by the locking means to retain the shelf in a selected horizontal position.

20 In one embodiment, the shelf support means comprises a pair of spaced support arms with spaced detents formed along the underside thereof, the locking mechanism including a movable actuator bar located underneath and adjacent the front edge of the shelf assembly, said bar being movable to disengage
25 the locking means from the detents so that the shelf can be moved relative to the shelf support means. In this

embodiment, the locking bar is normally biased into engagement with the detents, the locking bar extending between a pair of lever arms connected to the actuator bar and each lever arm being pivotally mounted to the adjacent
5 movable runner intermediate its ends.

Preferably the locking bar is spring biased so as to normally engage the detents but is released when the actuator bar is moved.

10

The locking bar is preferably raised to release the locking mechanism but it can be mounted so that it can be depressed or pulled towards the front edge of the shelf assembly thereby disengaging a locking peg or bar from the detent
15 through a series of pivoted levers.

In an alternative embodiment, the locking mechanism comprises a pivotally mounted locking lever which is normally biased into engagement with a selected hole of a
20 plurality of holes provided at spaced increments along the length of said shelf support means. Preferably one locking lever is associated with each shelf support means, said levers operating independently of each other but they can be connected together to work in conjunction with each other.
25 Furthermore, only a single locking lever could be used.

The main advantage of this embodiment over the earlier mentioned embodiment is that the or each locking lever can be arranged to cooperate with locking holes provided at a location above the bottom of the shelf support means. Thus, 5 the locking means need not protrude below the shelf support means which can be an advantage if vertical access space between the shelves is limited as it means that the bottom of the locking mechanism will not catch or foul on product stacked on the shelf beneath it when the shelf is pulled out 10 or returned during loading.

Preferably the shelf includes a front and rear rail or guide, at least one shelf divider being slidably mounted for movement along said rails or guides.

15

The dividers conveniently comprise a vertical wall structure which is non-adjustable in length or alternatively the divider can have a longitudinal slot which slidably receives a product support member therein.

20

A preferred merchandising stand incorporating an extendable and angularly adjustable shelf assembly will now be described, by way of example only, with reference to the accompanying drawings in which:

25

FIGURE 1 is a perspective view of a merchandising display

stand incorporating shelf assemblies of the present invention;

FIGURES 2A-2F are various views of the angular shelf adjustment mechanism used in the shelf assemblies shown in

5 FIGURE 1;

FIGURE 3 is a side view of the pull-out shelf assembly shown in FIGURE 1;

FIGURE 3A is a schematic view showing the shelf runner assembly attached to the shelf support means in various
10 different longitudinal locations relative thereto; and

FIGURE 4 is a cross section through one of the shelf assemblies shown in FIGURE 1.

Referring to the drawings, there is shown in Figure 1 a
15 display stand comprising a pair of known slotted uprights 1 to which two shelf assemblies of the present invention have been fitted.

The upper shelf assembly comprises a main support section 2
20 extending between the two uprights 1 and having mounting means at each end thereof by means of which the support section 2 can be attached to the uprights 1. The mounting means comprise a pair of cooperating plates 3,4 which are better illustrated in Figures 2A-2F. A plate 4 is welded to
25 each end of the main support section 2 and is provided with a pair of diametrically opposed pegs 5 protruding outwardly

therefrom. An outer plate 3 with a hook section 1B fits into and is received by slots 1A in the upright 1. The plate 3 has a hole located centrally in it which receives a screw 8 to secure the outer plate 3 to the inner plate 4.

5 The outer plate 3 is provided with a series of holes 6 arranged in an arc around the central screw 8 and pegs 5 cooperate and fit into these holes 6. It will be noted that the pegs 5 fit into the holes 6 located diametrically opposite each other about the central screw 8.

10

As can be seen more clearly in Figures 2C and 2D, on release of the screw 8, the pegs 5 can be disengaged from the holes 6 in the outer plate 3 and the angle of the shelf support member 10 can be varied by fitting the pegs 5 into a
15 different pair of diametrically opposed holes 6 and then secured in position by retightening the screw 8.

Figures 2E and 2F show a modified main support section 2 to that shown in Figure 1 in that its length can be varied. The
20 illustrated main support section comprises two tubular sections 2 and 2A, the section 2A fitting inside the section 2. The section 2 is formed with a pair of spaced parallel longitudinal slots 11 which receive bolts 12 threadingly fitted to the main support section 2A. It can be seen
25 therefore that the length of the main support section 2, 2A can be varied by moving the two parts 2, 2A relative to each

other longitudinally whereby the bolts 12 slide along the slots 11. Tightening the bolts 12 fixes the position of the section 2 relative to the section 2A.

5 Referring now to Figures 3 and 3A, there is shown in more detail the pull-out facility provided on the shelf assemblies shown in Figure 1. Each shelf assembly comprises a shelf support means or arm 10 secured to the main support section 2 attached to the slotted uprights 1. An angular
10 adjustment facility comprising the cooperating plates 3,4 and pegs 5 is provided at one end of the shelf support arms 10 but this is optional. The bottom edge of each arm 10 is provided with incrementally spaced detents 11. An extendable runner assembly is attached to each shelf support
15 arm 10 and comprises a movable running rail 20 and a fixed member or guide rail 21.

Each support arm 10 is provided with runner assembly mounting means thereon which in the arrangement shown in
20 Figure 3A comprises several spaced holes 22 (only one is visible) along the length of the arm 10. A series of corresponding spaced holes 23 is formed in the fixed member 21 of the extendable runner assembly. It will be appreciated therefore that the fixed member 21 of the guide
25 rail assembly can be mounted on its support arm 10 in any one of several different longitudinal locations such as the

four shown in Figure 3A whereby, in each case, the end 21A of the fixed runner member 21 projects further than the runner located immediately above it thereby providing a cascade effect for the shelves supported by the arms 10. In
5 each case, the movable runner rail 20 can be extended forwardly by all of its available length of travel so each shelf can be fully stocked with product regardless of the cascading shelf arrangement.

10 Instead of using a series of aligned holes 22,23, cooperating slots or some other means can be used to provide this same longitudinal adjustment facility for the mounting of the extendable runner assembly on each support arm 10.

15

Figure 4 shows front shelf rail 25 and rear shelf rail 27 (preferably metal or plastic extrusions) with dividers 29 having downwardly projecting feet 30 which are fitted into slots 26 and 28 provided respectively along the whole length
20 of the front and rear rails 25,27. Thus, the dividers 29 can be slid along the slots 26,28 to vary their position along the length of the shelf assembly. Instead of a single wall shelf divider 29 as shown in Figure 4, an end stop 37 which slides in a longitudinal slot in a base portion 36 can
25 be used (see Figure 1). The front rail 25 can include a portion which receives a label holder 31 and also an

upstanding front shelf edge 32.

Referring now to the embodiment of Figures 1 and 3, it can be seen that a locking mechanism is provided on the shelf assembly which comprises a pair of lever arms 14 pivotally attached at 15 to the extendable runner assembly 20,21. An activator bar 12 extends between the spaced lever arms 14 just beneath the front edge of the shelf assembly. It should be noted in the Figure 3 illustration that only part of the shelf assembly is shown so the actuator bar appears to project forwardly of the front edge. This is not in fact the case, as can be better seen from Figure 1. A locking bar 13 is provided at the other inward end of the lever arms 14 and this is arranged to engage in the detents 11. It will be noted that each lever arm 14 has an end section 14A which is cranked slightly downwardly to assist in the locking engagement of the locking bar 13 in the detents 11. A spring 16 biases the locking bar 13 into engagement with the detents 11 in normal use. In order to extend the shelf in the direction of the arrows A or B in Figure 3, the actuator bar 12 is raised in the direction of the arrow C and it will be seen that this results in the locking bar 13 moving downwardly out of engagement with the detent 11. Thus, the shelf assembly supported by the extendable rails 20,21 can be moved in either direction indicated by the arrow until the locking bar engages in the next detent 11.

If further inward or outward movement of the shelf assembly is required, then the actuator bar 12 is again released so that the locking bar 13 can move to engage the next detent 11.

5

It will be seen from the foregoing description that the locking mechanism provided on the shelf assembly shown in Figures 3 and 3A is extremely simple to operate and allows it to be readily moved inwardly or outwardly relative to the
10 uprights 1 by fixed incremental distances and then locked in position.

In some circumstances, it may be undesirable to have the locking lever 14 project below the bottom edge of the
15 support arm 10 as shown in Figure 3 due to space limitations between adjacent shelves so the operating mechanism for the lever 14 can be redesigned so that the free end of the lever engages in holes provided in upper wall 10A of the support arm 10, the lever being spring biased to normally engage
20 said holes by means reacting between said upper wall 10A and the lever. With such an arrangement, when the lever 14 is raised in the direction of arrow C to release the engagement between it and the holes 10A, it will not protrude beyond the bottom edge 10B of the support arm 10 and catch or foul
25 on product stacked on a shelf (not shown) located immediately beneath it.

CLAIMS

1. An extendable shelf assembly adapted to be removable mounted on the slotted uprights of a merchandising display stand comprising a shelf mounted on shelf support means, shelf extending means attached to said shelf and the shelf support means and operable so that the shelf can be extended or retracted, and manually operable locking means which permit the shelf to be extended or retracted and moved from one position to another when the locking means are released, said locking means retaining the shelf in its selected position when engaged.

2. An extendable shelf assembly as claimed in claim 1 wherein the shelf extension means comprises at least one extendable runner assembly with a fixed member and a runner movably mounted thereon, the fixed member being attached to the shelf support means and the movable runner being attached to the shelf, the movable member being mounted so as to be extendable from and retractable within the fixed member.

3. An extendable shelf assembly as claimed in claim 1 or claim 2 wherein the locking means is mounted on the extendable shelf and engages with the shelf support means to retain the shelf in a selected position.

4. An extendable shelf assembly as claimed in claim 3 wherein the shelf support means has incrementally spaced detents thereon engagable by the locking means to retain the shelf in a selected horizontal position.

5

5. An extendable shelf assembly as claimed in claim 4 wherein the shelf support means comprises a pair of spaced support arms with spaced detents formed along the underside thereof.

10

6. An extendable shelf assembly as claimed in claim 5 wherein the locking mechanism includes a movable actuator bar located underneath and adjacent the front edge of the shelf assembly, said bar being movable to disengage the
15 locking means from the detents so that the shelf can be moved relative to the shelf support means.

7. An extendable shelf assembly as claimed in claim 6 wherein the locking means comprises a locking bar connected
20 to the actuator bar and engagable with the detents.

8. An extendable shelf assembly as claimed in claim 7 wherein the locking bar is normally biased into engagement with the detents.

25

9. An extendable shelf assembly as claimed in claim 7 or

claim 8 wherein the locking bar extends between a pair of lever arms connected to the actuator bar, each lever arm being pivotally mounted to the adjacent movable runner intermediate its ends.

5

11. An extendable shelf assembly as claimed in any of claims 1-6 wherein the locking mechanism comprises a pivotally mounted locking lever associated with said shelf support means which is normally biased into engagement with
10 a selected hole of a plurality of holes provided at spaced increments along the length of said shelf support means.

12. An extendable shelf assembly as claimed in claim 11 wherein the shelf is supported on a pair of shelf support
15 means each having a locking lever operably associated therewith.

13. An extendable shelf assembly as claimed in claim 12 wherein the locking levers are operable independently of
20 each other

14. An extendable shelf assembly as claimed in any preceding claim wherein the shelf includes a front and rear rail or guide, at least one shelf divider being slidably
25 mounted for movement along said rails or guides.

15. An extendable shelf assembly as claimed in claim 14 wherein the or each divider has a product support member mounted thereon to slide along the length of said divider.

5 16. An extendable shelf assembly as claimed in claim 15 wherein the product support member is biased for movement towards the front of said divider.

17. An extendable shelf assembly as claimed in any of
10 claims 2-16 wherein the shelf support means includes mounting means adapted to permit the longitudinal position of the fixed member of the runner assembly on the support means to be varied.

15 18. An extendable shelf assembly as claimed in claim 17 wherein the mounting means is a series of spaced holes.

19. An extendable shelf assembly as claimed in claim 17 wherein the mounting means is a longitudinally extending
20 slot.

20. An angularly adjustable shelf support assembly comprising a first mounting member with means thereon for releasably attaching said member to a slotted upright, and
25 a second mounting member for attachment to the shelf to take the load thereof, said first and second mounting members

having cooperating pegs and holes thereon by means of which the angular orientation of the second member relative to the first member can be changed and securing means to hold the first and second mounting members together in their selected
5 angular orientation.

21. A shelf support assembly as claimed in claim 20 wherein a pair of pegs protrude from one mounting member to cooperate with a series of holes arranged in an arc on the
10 other mounting member.

22. A shelf support assembly as claimed in claim 21 wherein the pegs are located diametrically opposite each other and the securing means is located midway between said pair of
15 pegs.

23. A shelf support assembly as claimed in any of claims 20-22 wherein the securing means is a screw which passes through a hole in the first mounting member and is received
20 in the second mounting member.

24. A shelf support assembly as claimed in any of claims 20-23 wherein the first and second mounting members are flat plates.
25

25. A shelf support assembly as claimed in any of claims

20-24 wherein the holes and pegs are arranged on the first and second mounting members around a central pivot axis about which the second member pivots.

5 26. An extendable shelf assembly as claimed in any of claims 1-19 including an angularly adjustable shelf support assembly fitted to the shelf as claimed in any of claims 20-25.

10 27. An extendable shelf assembly substantially as herein described with reference to the accompanying drawings.

28. A shelf support assembly substantially as herein described with reference to the accompanying drawings.

**Examiner's report to the Comptroller under Section 17
(The Search report)**

Application number
GB 9421890.6

Relevant Technical Fields

- (i) UK Cl (Ed.N) A4B
(ii) Int Cl (Ed.6) A47B

Search Examiner
MR J GRAHAM

Date of completion of Search
17 JANUARY 1995

Databases (see below)

- (i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant
following a search in respect of
Claims :-
1-19, 26 AND 27

(ii)

Categories of documents

- X:** Document indicating lack of novelty or of inventive step. **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category. **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art. **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 740311	(WEBER) see page 1 lines 88-91	1-3
X	US 5088607	(SARA LEE) see column 4 lines 47- and hook 11	1
X	US 4776472	(BRAND) see dimple 49, Figure 2	1
X	US 4620489	(KENT CORP) see eg Figure 2 recesses 46a, 46b	1
X	US 4602570	(FRITO-LAY) see eg Figures 2 and 5 tab 46	1

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).